Space Weather Forecast

Issued on Friday, 07 April 2023 at 00:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate flares (R1-R2; Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with a newly emerged region close to the southeast limb producing an isolated Moderate-Class flare, peaking at 06/0553 UTC. There are three other sunspot regions on the visible disc. A region in the southwest currently appears to be the largest and most complex region on the disc and has previously exhibited some magnetic complexity that has now faded. However, given that the new region rotating onto the southeast limb has already produced a Moderate-class flare, this suggests greater complexity than can currently be accurately assessed.

No Earth directed Coronal Mass Ejections (CMEs) have been seen in available imagery.
Solar Wind / Geomagnetic Activity: The solar wind has been at largely at slow-ambient levels around 380 km/s, with brief periods of slightly elevated winds. Around 06/1930UTC winds increased to 410 km/s and have since remained slightly elevated. Magnetic field strength has been weak throughout, with the important north-south component varying weakly.

Geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: High energy protons have been at background levels, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is most likely to be Low, but with a chance of Moderate activity, most likely resulting from the new region in the southeast of the visible disc, or from the other relatively active region in the southwest.

Solar Wind / Geomagnetic Activity: There are no Earth-directed Coronal Mass Ejections (CMEs) expected. Wind speeds are likely to fluctuate between slow-ambient and slightly elevated levels. In the absence of any CMEs, wind speeds are expected to remain at or near this level for much of Days 1-3 (07-09 Apr). A further coronal hole may start to show some fast wind influence at the end of Day 3, but this is more likely to occur on Day 4 (10 Apr).

Geomagnetic activity is expected to be Quiet to Unsettled, with a chance of Active periods from late Day 3 and through Day 4 if we do see arrival of the fast wind.

Energetic Particles / Solar Radiation: Solar radiation storms are unlikely through this period, although there is a very slight chance of reaching the Minor Storm level should a more significant flare occur.

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Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	25	25	25	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	3	3	3	3
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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